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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/803,655	03/12/2001	Tatsuya Uchikawa	OSP-10234	6604

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EXAMINER	
LEURIG, SHARLENE L	

ART UNIT	PAPER NUMBER
2879	

DATE MAILED: 12/04/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/803,655

Applicant(s)

UCHIKAWA ET AL.

Examiner

Sharlene Leurig

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 October 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 5 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-11 and 14-19 is/are rejected.
- 7) ☒ Claim(s) 12 and 13 is/are objected to.
- 8) ☒ Claim(s) 1-19 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 3/12/01 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.

- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Examiner's Notes

The following error occurs in the Specification:

Page 11, lines 16-21 refer to subject matter present in Figure 5, not Figure 1 as indicated in the paragraph. Elements of Figure 1 begin in the paragraph beginning at line 22 of the same page. All references to Figure 1 in the paragraph consisting of lines 14 to 21 should be changed to Figure 5.

Appropriate correction is required.

Election/Restrictions

1. Claim 5 is withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected method of manufacturing a high pressure discharge lamp, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 7.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the length of the "end portion" of the electrodes, the length comprising the "portion other than the end portion" of the electrodes, and the distance from the axial center of the electrode to a particular point on its surface must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

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A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Barthelmes et al. (5,001,395) (of record). Barthelmes discloses a high pressure discharge lamp with a quartz glass bulb, a conductive element which is airtightly sealed at a sealing portion of the quartz glass bulb, and a pair of electrodes, each electrode of the pair being disposed in a quartz glass bulb so as to be opposite the other and each electrode being connected to the conductive element, wherein a part of each electrode is sealed at a sealing portion so as to generate a contacting portion formed by the part of the electrode and the quartz glass bulb (column 3, lines 3-20). The relationship between the electrode dimensions and the supplied power fits into the claimed equations. The table in column 3 shows a power rating of 35 W, an electrode contacting portion length of 1.7 mm, and an electrode diameter of 0.25 mm. The contacting portion length (1.7 mm) is less than $200/(P \times D)$ (which equals 22.6 mm) and greater than $0.8/(D^2)$

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$\times \pi$) (which equals 1.59), which satisfies the claimed equations. The conductive element is molybdenum foils (column 3, line 12).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3, 4, 6, 7-11, 15, 16 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barthelmes et al. (5,001,395) (of record) in view of Honda et al. (6,249,086). Barthelmes discloses a high pressure discharge lamp with all the limitations discussed above but lacks an electrode surface roughness at the end portion of 5 μm or less. However, Barthelmes recognizes the need for a lamp with a long life (column 1, line 57). Honda teaches the polishing of the electrode end portion to reduce the blackening of the quartz glass bulb and thereby increase the premium life of the lamp. Honda teaches a lamp with an electrode with a maximum surface roughness of 5 μm or less (column 16, line 65). The surface roughness that Honda teaches falls within the claimed ranges of 3 μm or less, 1 μm or less, and 0.5 μm or less. Honda also teaches the use of electrolytic polishing to yield an electrode with the desired surface roughness.

Regarding claim 4, Honda discloses a surface roughness at the contacting portion, but does not disclose the surface roughness to be between 2 and 3 μm .

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However, it would have been obvious to one of ordinary skill in the art at the time of the invention to make a contacting portion with a surface roughness of between 2 and 3 μm , since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Regarding claim 8, Barthelmes discloses the relationship between the electrode end length and the supplied power, but does not disclose the length of the end portion to be between $P/150$ and $P/100$ mm, where P is the supplied power. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to make electrodes whose end portions were between $P/150$ and $P/100$ mm, where P is the supplied power, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Therefore regarding claims 3, 4, 6, 7-11 and 19 it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Barthelmes' electrode with one with a specified surface roughness via electrolytic polishing in order to increase the longevity of the lamp, as taught by Honda.

Barthelmes discloses a high pressure lamp comprising a fill of a noble gas, mercury and a mixture of metal halides (halogens) but is silent on the specific amounts of the fill components. Honda teaches a fill comprising 80 torr of an inert gas (column 17, line 45), which is within the claimed range of 6 kPa or more. Honda also teaches a halogen content within the range of 0.1×10^{-3} to 2×10^{-3} mol/cc, the lower end of which is

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equivalent to the claimed value of $10^{-2} \mu\text{mol}/\text{mm}^3$. Therefore regarding claims 15 and 16 it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Barthelmes' lamp to have the specified inert gas vapor pressure and the halogen gas amount taught by Honda in order to have a long-lived lamp compatible with the electrode structure.

6. Claims 14 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barthelmes et al. (5,001,395) (of record) in view of Honda et al. (6,249,086) as applied to claims 3, 4, 6, 7-11, 15, 16 and 19 above, and further in view of Takeuti et al. (6,211,616). Barthelmes discloses a high pressure lamp with all the limitations discussed above, and Honda teaches a high pressure lamp with electrodes with a given surface roughness as discussed above. While Barthelmes teaches a fill of a noble gas, mercury and a mixture of metal halides (halogens), he is silent on the specific amounts of the fill components. However, Takeuti teaches a mercury fill of 0.12 to $0.35 \text{ mg}/\text{mm}^3$, which corresponds with the claimed amount, in order to have a long-lived lamp (column 3, line 1). Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Barthelmes high pressure lamp with electrodes with the surface roughness taught by Honda and further with a mercury fill of 0.12 to $0.3 \text{ mg}/\text{mm}^3$ as taught by Takeuti in order to increase the lamp life. Furthermore, while Honda and Barthelmes lack a tungsten electrode comprising potassium oxide, Honda teaches a lamp with electrodes formed from "genuine tungsten or tungsten containing sub-components," but is silent on what the sub-components might be (column 5, line 42). Takeuti teaches the use of tungsten electrodes that contain potassium oxide

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(column 3, line 10). The combination of the fill components and electrode content achieve a long-lived lamp (column 3, line 1). Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the high pressure lamp of Barthelmes with an electrode surface roughness as taught by Honda and further with a potassium oxide containing tungsten electrodes as taught by Takeuti in order to increase the life of the lamp.

7. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Barthelmes et al. (5,001,395) (of record) in view of Honda et al. (6,249,086) as applied to claims 3, 4, 6, 7-11, 15, 16 and 19 above, and further in view of Genz (5,635,796). Barthelmes discloses a high pressure lamp with all the limitations discussed above, and Honda teaches a high pressure lamp with electrodes with a given surface roughness as discussed above. Neither Barthelmes nor Honda teach a lamp with a bulb wall load of 0.8 W/mm^2 or more. However, Barthelmes teaches the need for a lamp with an increased lifetime (column 1, line 57). Genz teaches the use of a high pressure lamp with a combination of characteristics that result in a longer lamp life, including a wall load between 40 and 85 W/cm^2 , which is equivalent to the claimed amount of 0.8 W/mm^2 or more. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the high pressure lamp of Barthelmes with an electrode surface roughness as taught by Honda and further with a wall load of 0.8 W/mm^2 or more as taught by Genz in order to increase the life of the lamp.

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Allowable Subject Matter

8. Claims 12 and 13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The claims are found to be allowable because no prior art suggests or shows an electrode with a surface roughness of between 5 to 12 μm .

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sharlene Leurig whose telephone number is (703)305-4745. The examiner can normally be reached on Monday through Friday, 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on (703)305-4794. The fax phone numbers for the organization where this application or proceeding is assigned are (703)308-7382 for regular communications and (703)308-7382 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

Sharlene Leurig
November 25, 2002

SL


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